Prices in Grandma's Day

- Ever heard grandparents complain about today's prices?
- Were things really cheaper in the "good old days"?
- Let's look at two goods and compare prices over time …

How Much Have Prices Changed?

Historic Prices

Goods	Price in 1967	Price in 2012	Percent Change in Price	1967 Price in 2012 Dollars
Movie Ticket	$1.22	$7.92		
McDonald's Big Mac®	$0.45	$4.33		

- Percent change formula:

$$\frac{\text{Price Year 2 (2012)} - \text{Price Year 1 (1967)}}{\text{Price in Year 1 (1967)}} \times 100$$

How Much Have Prices Changed?

- Measure percent change in prices from one year to another

- Percent change formula:

$$\frac{\text{Price in Year 2 (2012)} - \text{Price in Year 1 (1967)}}{\text{Price in Year 1 (1967)}} \times 100$$

How Much Have Prices Changed?

Historic Prices

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How Much Have Prices Changed?

Changes in Overall Price Level

Goods	Price in 1967	Price in 2012	Percent Change in Price	1967 Price in 2012 Dollars
Movie Ticket	$1.22	$7.92	549%	
McDonald's Big Mac®	$0.45	$4.33	862%	

$$\frac{7.92\ (2012) - 1.22\ (1967)}{1.22\ (1967)} \times 100$$

$$\frac{4.33\ (2012) - 0.45\ (1967)}{0.45\ (1967)} \times 100$$

Inflation

- Inflation is a rise in the average level of prices of goods and services in an economy over a period of time.
  - A trend, not a one-time event
  - A rise in most, if not all, prices over time
- When price levels rise, purchasing power decreases and our dollars buy fewer goods and services.
- Measured by the Bureau of Labor Statistics (BLS)

Consumer Price Index

- The index used to measure average changes in prices paid by consumers in urban markets for a market basket of commonly purchased goods and services.

- Compares the combined price of all of these goods and services in the market basket from one month to the next.
- The BLS collects information about the prices of goods and services in eight major categories.

Consumer Price Index Components

- FOOD AND BEVERAGES
  - breakfast cereal, milk, coffee, chicken, full service meals, snacks
- HOUSING
  - rent of primary residence, owners' equivalent rent, fuel oil, bedroom furniture
- APPAREL
  - men's shirts and sweaters, women's dresses, jewelry
- TRANSPORTATION
  - new vehicles, airline fares, gasoline, motor vehicle insurance

Consumer Price Index Components

- MEDICAL CARE
  - prescription drugs and medical supplies, physicians' services, eyeglasses and eye care, hospital services
- RECREATION
  - televisions, toys, pets and pet products, sports equipment, admissions
- EDUCATION AND COMMUNICATION
  - college tuition, postage, telephone services, computer software and accessories
- OTHER GOODS AND SERVICES
  - tobacco and smoking products, haircuts and other personal services, funeral expenses

Working with CPI

- Index: a mathematical tool that substitutes an index level for the overall price of a market basket

- All indices use a base year — Index level set to 100
- The CPI uses 1982−84 as its reference base
- Base year is used to calculate changes in prices of the market basket
- Index of 105 (1985) means:
  - a 5% increase in the price of the market basket since base year

Working with CPI

- **Inflation rate** changes in the Index - expressed as percent changes.
- I**nflation rate -** percent change in the CPI over the reference period:

$$\frac{\textbf{CPI (Year 2) – CPI (Year 1)}}{\textbf{CPI (Year 1)}} \textbf{ x 100}$$

- Inflation rate from 1990 to 1991
  - **CPI – 1991: 136.2** **CPI – 1990: 130.7**

$$= \frac{\text{CPI (1991) – CPI (1990)}}{\text{CPI (1990)}} \text{ x 100}$$

$$=$$

(Note: Year 1 is the earliest year)

Working with CPI

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- Inflation rate from 1990 to 1991 was **4.2%**:
  - **CPI – 1991: 136.2** **CPI – 1990: 130.7**

$$= \frac{\text{CPI (1991) – CPI (1990)}}{\text{CPI (1990)}} \text{ x 100}$$

$$= \frac{(136.2 - 130.7)}{130.7} \text{ x 100}$$

= (5.5/130.7) x 100 = **4.2%**

(Note: Year 1 is the earliest year)

Working with CPI

Calculating Inflation Rates

	CPI (Year 1)	CPI (Year 2)	Calculations	Inflation Rate
1995	148.2	152.4		
2005	188.9	195.3		
2012	224.9	229.6		

$$\text{Inflation rate} = \frac{\text{CPI (Year 2)} - \text{CPI (Year 1)}}{\text{CPI (Year 1)}} \times 100$$

Working with CPI

Calculating Inflation Rates

	CPI (Year 1)	CPI (Year 2)	Calculations	Inflation Rate
1995	148.2	152.4	$\frac{(152.4 - 148.2)}{148.2} \times 100$	
2005	188.9	195.3	$\frac{(195.3 - 188.9)}{188.9} \times 100$	
2012	224.9	229.6	$\frac{(229.6 - 224.9)}{224.9} \times 100$	

$$\text{Inflation rate} = \frac{\text{CPI (Year 2)} - \text{CPI (Year 1)}}{\text{CPI (Year 1)}} \times 100$$

Working with CPI

Calculating Inflation Rates

	CPI (Year 1)	CPI (Year 2)	Calculations	Inflation Rate
1995	148.2	152.4	$\frac{(152.4 - 148.2)}{148.2} \times 100$	2.8%
2005	188.9	195.3	$\frac{(195.3 - 188.9)}{188.9} \times 100$	3.4%
2012	224.9	229.6	$\frac{(229.6 - 224.9)}{224.9} \times 100$	2.1%

$$\text{Inflation rate} = \frac{\text{CPI (Year 2)} - \text{CPI (Year 1)}}{\text{CPI (Year 1)}} \times 100$$

How Much Have Prices Changed?

Changes in Overall Price Level

Goods	Price in 1967	Price in 2012	Percent Change in Price	Converting Grandpa's Prices: 1967 Price x (2012 CPI / 1967 CPI)
Movie Ticket	$1.22	$7.92	549%	
McDonald's Big Mac®	$0.45	$4.33	862%	

- Percent change formula:

$$\frac{\textit{Price Year 2} - \textit{Price Year 1}}{\textit{Price in Year 1}} \times 100$$

Purchasing Power

- "Purchasing power" refers to the amount of goods or services that can be purchased with an amount of dollars.
- The purchasing power of dollars is eroded by overall price increases.
  - Because prices tend to rise (due to inflation), you'd need a much larger salary to maintain the same standard of living.
- You would need an increase in salary of 549 percent and 862 percent (for Big Macs® and movie tickets) to be as well off as your grandfather was in 1967.

- How many Big Macs® could be bought for $1 in 1967? In 2012?

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McDonald's Big Mac®	$0.45	$4.33	862%	

- 1967 CPI: 33.4
- 2012 CPI: 229.6

1967 Price x (2012 CPI / 1967 CPI)

https://www.minneapolisfed.org/community/teaching-aids/cpi-calculator-information/consumer-price-index-and-inflation-rates-1913

How Much Have Prices Changed?

Changes in Overall Price Level

Goods	Price in 1967	Price in 2012	Percent Change in Price	Converting Grandpa's Prices: 1967 Price x (2012 CPI / 1967 CPI)
Movie Ticket	$1.22	$7.92	549%	$8.39
McDonald's Big Mac®	$0.45	$4.33	862%	$3.09

- 1967 CPI: 33.4
- 2012 CPI: 229.6

1967 Price x (2012 CPI / 1967 CPI)